DG JRC contributes to EU health and consumer protection

Health and consumer protection are of primary concern to EU citizens. The Joint Research Centre (DG JRC) offers scientific support to the development and implementation of EU policies in this area, aiming to increase understanding of the potential risks to health from chemicals, biocides, genetically modified organisms (GMOs), contaminants from materials in contact with food, and consumer products. It also produces reference materials and validates testing methods to promote regulatory compliance. Major areas of work include:

- **Biotechnology and GMOs** – test methods are being validated for detecting GMOs in food and feed. DG JRC, as the Community Reference Laboratory (CRL) for GM food and feed, is assisted by the European Network of GMO Laboratories (ENGL) in supporting the Agriculture (AGRI), Health and Consumer Protection (SANCO), Trade and Environment DGs;
- **Alternative testing methods** – the European Centre for the Validation of Alternative Methods (ECVAM) is developing and validating methods to replace, reduce or refine the use of animal testing for medicines and other products;
- **Indoor pollution monitoring** – DG JRC is pioneering research into indoor environment pollution, as indicators suggest that volatile organic compounds in the indoor environment can account for allergies and illnesses in 20% of the EU population.
- **Safety and quality of the food chain** – food safety and quality are key areas of research at DG JRC. As the CRL for feed additives, DG JRC supports the Statistical Office of the European Communities (EUROSTAT) and the AGRI and SANCO DGs.

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Ensuring the safety of GMOs

GM plants and food products derived from them may only be put on the EU market if they have passed stringent assessments. Market authorisation is followed by screening food and feed samples for DNA or proteins indicating genetic modification. DG JRC runs the CRL for GM food and feed; set up under the regulation to coordinate validation of detection methods for sampling, detecting, identifying and measuring GMOs in raw materials, ingredients and final products. It also coordinates the ENGL, bringing together 71 control laboratories from throughout the 25 Member States. The Network ensures strong and uniform application of the legislation and, by guaranteeing clear labelling, safeguards the right of consumers to choose non-GM products.

Alternative testing methods

The potential safety risks of chemicals must be identified by adequate testing before marketing is carried out. ECVAM, established under the 1991 animal protection Directive, coordinates the validation of 'alternative methods' at EU level, (i.e. methods that reduce, refine or remove the need for animal testing). The new EU regulatory framework for chemicals (REACH[1]), and the 7th amendment to the cosmetics Directive show the urgent need for new alternative methods to ensure public safety. ECVAM, with its own Scientific Advisory Committee monitoring ethical aspects, has made several such advances. ECVAM-validated tests using human blood cells to detect pyrogenic (fever-inducing) agents in drugs are already in use in over 200 European laboratories. They are faster, more accurate and cheaper than animal tests and are being taken up rapidly by industry. Another group of ECVAM-validated tests for skin corrosion and phototoxicity has been endorsed by OECD for international use.

Indoor pollution monitoring

DG JRC has shown that indoor environments can expose people to twice the level of air pollution found outdoors. Europeans typically spend up to 90% of their time indoors, where they can be exposed to a range of volatile organic compounds; some with toxic, mutagenic or carcinogenic effects. Through its research on indoor pollution, DG JRC is contributing to understanding the potential causes of asthma, allergies and headaches – symptoms suffered by 20% of the EU population. Indoor pollutants can arise from building or furnishing materials, from equipment (e.g. photocopiers) or chemicals (e.g. paint, smoke, radon, asbestos and benzene).

Measurements in DG JRC's Indoortron Facility

Dilution of samples for a cytotoxicity assay

The DG JRC Indoortron facility is a walk-in controlled environment chamber with precision control of temperature, humidity, and air quality and exchange rate. It allows measurement of the emissions from equipment or materials, and models' testing to predict emissions. DG JRC's INDEX project links leading scientists from across Europe to identify priorities and define an EU strategy to reduce indoor pollution. Tests at the Indoortron show that environmental tobacco smoke contributes significantly to indoor air pollution, and that changes in ventilation rates have no significant influence on the concentration of tobacco components (burning products) during smoking. This has contributed to some smoking bans, e.g. in Ireland.

Safety and quality of the food chain

Feed additives like vitamins are used to improve animal productivity, but it must be ensured that they have no adverse effects on human or animal health, or the environment. DG JRC is home to the CRL for authorising feed additives. Validating the test methods proposed for their detection is especially important where Directives establish maximum residue limits in food products derived from animals. Working with national control laboratories, DG JRC develops, validates and harmonises analytical methods for both food and animal feed. This collaboration has helped the new Member States to ensure compliance with EU labelling requirements. Other areas of research cover determination of acrylamide in food products, central nervous tissue in meat products, food allergens, dioxins and organic food.

1 - The EU regulatory framework for Registration, Evaluation and Authorisation of Chemicals

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